ACTIVITIES OF THE FRASER RIVER JOINT ADVISORY BOARD

EIGHTEENTH ANNUAL REPORT

FOR THE PERIOD — APRIL 1, 1985 TO MARCH 31, 1986

CANADA — BRITISH COLUMBIA AGREEMENT, MAY 24, 1968 — FLOOD CONTROL IN THE FRASER VALLEY

FRASER RIVER JOINT ADVISORY BOARD

British Columbia

B.E. Marr
P.M. Brady
J.D.C. Fuller

Canada

E.M. Clark
F.C. Boyd

March 31, 1986

Dear Mister Minister:

The Fraser River Joint Advisory Board herewith submits its 18th Annual Report for the year ending March 31, 1986 in accordance with the requirements of paragraph 18(a) of the May 24th, 1968 Agreement.

Respectfully submitted

B.E. Marr, Chairman,
Fraser River Joint Advisory Board

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INTRODUCTION

The Federal-Provincial Agreement governing this Program was signed on May 24, 1968 to provide flood protection for the Lower Fraser Valley in British Columbia over a ten-year period. The Agreement provides for rehabilitation of river and sea dykes, for bank protection to ensure safety of dykes against erosion, and for pumping capacity and main drains to prevent flooding behind the dykes as a result of runoff. Projects approved must be practical, engineeringly sound and economically justified. As a result of increased costs all drainage works have been deferred to give first priority to completion of the dykes and bank protection necessary to prevent major flood damages.

The Agreement has been amended five times, primarily to provide additional funds and extend the termination date to March 31, 1995. The current level of funding is $80.5 million from each government or $161.0 million in total. The projected annual funding is approximately $2.5 million from each government.

Up to March 31, 1986, expenditures under the Program amounted to $119,429,563.

The Barrowtown Dam and Pumpstation in Abbotsford was officially opened on September 16, 1985. A plaque to honour the achievements of the Fraser River Flood Control Program was unveiled by the Provincial Minister of Environment and the Parliamentary Secretary to the Federal Environment Minister.

Program Project Sign

Meetings

The 34th Board Meeting was held on June 20, 1985.

Board Submissions

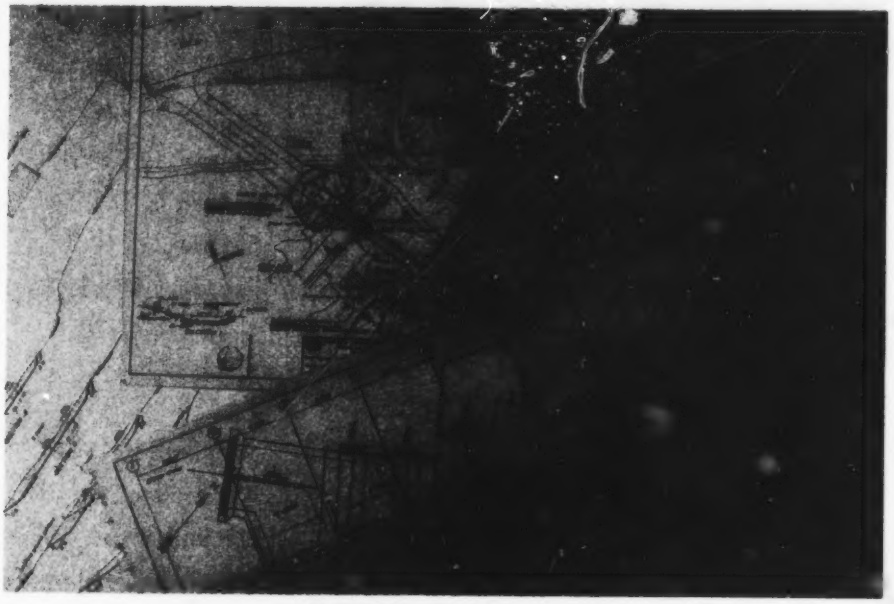
A Board Submission to the Ministers recommending an extension to the Agreement in time and an increase in funding was accepted by both governments and Amending Agreement 5 was signed on October 10, 1985. This Amendment provides additional funding of $41.0 million and extends the Program to March 31, 1995.

APPLICATIONS TO PROGRAM

Project	Date of Application
Kent	March 3, 1969
Pitt Meadows	March 3, 1969
Richmond	March 3, 1969
Surrey: Dams Sea Dykes Upstream Dykes South Westminster Area	May 6, 1969
Matsqui	May 15, 1969
Abbotsford (Sumas)	May 15, 1969
Chilliwack	August 1, 1969
Delta	August 1, 1969
Mission	August 4, 1969
Maple Ridge	October 1, 1969
Harrison Hot Springs	February 27, 1970
Vedder River	April 10, 1970
City of Port Coquitlam and District of Coquitlam	April 30, 1970
Colony Farm	August 24, 1970
Burnaby	November 26, 1970
New Westminster	December 18, 1970
Chilliwack Indian Reserves Nos. 3 and 4	March 8, 1971
Seabird Island	October 8, 1971
Langley	March 2, 1972
Dewdney Area Improvement District	April 30, 1973
Kamloops	October 28, 1973
East and West Nicomen Dyking District	February 15, 1974
Glen Valley Dyking District	February 20, 1974
Nicomen Island Improvement District	September 13, 1974

ENGINEERING

Engineering services for Richmond, Coquitlam, Surrey, Kamloops, Abbotsford, Kent, Mission, Pitt Meadows, Chilliwack, Delta and South Dewdney projects were provided by outside consulting companies and for Matsqui, Vedder River and Chilliwack bank protection work were provided by provincial government staff.



Typical Contract Drawings

TABLE I

PROJECT DESIGN STATUS

Local Authority	Project No.	Project Description	Progress for Final Design*
District of Kent	1.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains in the Agassiz and Harrison Mills areas.	Dyke design is complete. Reconstruction of Duncan-Bateson floodbox is complete.
District of Pitt Meadows	2.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains in the Maple Ridge Dyking District.	Dyke design is complete.
	2.2	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains in Pitt Meadows Area 2.	Design work commenced.
Township of Richmond	3.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains of that part of Lulu Island west of Queensborough.	This project is complete.
District of Matsqui	4.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains in Matsqui Dyking District.	This project is complete.
	4.2	A project comprising the extension of bank protection upstream of project 4.1.	This project is complete.
District of Chilliwack	5.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains for the District and Chilliwack Indian Reserves 3 and 4.	Design is complete except for the dykes through the Indian Reserve and south of Minto Landing. Dyke right-of-way through the Indian Reserves was not granted.
	5.2	A proposed project comprising realignment of the dyke across Chilliwack Indian Reserves 3 and 4.	Detailed dyke design is suspended. A status report is being prepared.
	5.3	A proposed project to protect the District of Chilliwack and the District of Abbotsford from flooding by the Chilliwack-Vedder River.	Design work is complete.
District of Delta	6.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains in Delta, including the Fraser, Tsawwassen Indian Reserve and Boundary Bay dykes.	Design of this project has been completed except for Boundary Bay Village.
	6.2	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains on Westham Island.	Design to full Program Standard has been deleted from the Program since the viability of the project could not be shown.
District of Mission	7.1	A project comprising the reconstruction of dykes, bank protection, drainage discharge structures, and main drains in the Mission City area.	Design work commenced.

*See Note on final page of this table.

. . . . continued

TABLE I (cont'd.)

Local Authority	Project No.	Project Description	Progress for Final Design*
District of Abbotsford	8.1	A project comprising the upgrading of Vedder Canal west bank dykes, the Sumas River dykes, bank protection, replacement of the Sumas Pump Station and Sumas River Dam.	This project is complete.
Village of Harrison Hot Springs	9.1	A project comprising the upgrading of the Harrison Hot Springs dyke, pump station and the capacity of Miami Creek.	Design work has been postponed on this project.
District of Surrey	10.1	A project comprising the repair of the Serpentine and the Nicomekl River dams.	This project is complete.
	10.2	A project comprising the upgrading of the Mud Bay Dyking District sea dykes, to prevent flooding by the sea, provision of bank protection and upgrading of internal drainage works.	Design to full Program Standard has been deleted from the Program since the viability of the project could not be shown.
	10.3	A project comprising the upgrading of flood protection works to prevent damage to land from internal drainage flooding and flooding from the Serpentine and Nicomekl Rivers.	This project has been deleted from the Program as it could not be shown to be economically viable.
	10.4	A project comprising the reconstruction of dykes and floodboxes in the South Westminster area.	This project is complete.
	10.5	A project comprising the upgrading of the Crescent Beach sea dykes, their erosion protection and internal drainage works.	Design to full Program Standard has been deleted from the Program since the viability of the project could not be shown.
City of New Westminster	11.1	A project comprising the upgrading of Lulu Island, Queensborough area dykes, bank protection and internal drainage works.	This project is complete.
District of Langley	13.1	A project comprising a dyke, a Salmon River discharge structure and possibly main drain work on the floodplain.	Design work has not yet commenced on this project.
	13.2	A project comprising flood protection for other adjacent District of Langley undyked areas.	Design work has not yet commenced on this project.
	13.3	A project comprising the upgrading of the Glen Valley Dyking District flood protection works.	Design work has not yet commenced on this project.
District of Coquitlam and City of Port Coquitlam	14.1	A project comprising the upgrading of Pitt River dykes, drainage discharge structures, and main drains protecting the City and the district south of DeBoville Slough.	This project is complete.
	14.2	A project comprising the upgrading of Pitt River dykes, drainage discharge structures, and main drains protecting the District north of DeBoville Slough.	Design to full Program Standard has been deleted from the Program since the viability of the project could not be shown.

*See Note on page following.

. . . . continued

TABLE I (cont'd.)

Local Authority	Project No.	Project Description	Progress for Final Design*
	14.3	A proposed project for the construction of of works to prevent flooding from the Coquitlam River.	Design work has not yet commenced on this project.
District of Maple Ridge	15.1	A project comprising the upgrading of flood protection works for several small dyked areas in the District.	Design work has not yet commenced on this project.
Province of B.C.	16.1	A project comprising the upgrading of the flood protection works of Colony Farms.	Design work has not yet commenced on this project.
Department of Indian and Northern Affairs	17.1	A proposed project for the construction of bank protection works on Seabird Island.	Based on estimated costs and benefits, further work cannot be justified on the basis of existing Program criteria.
Dewdney Area Improvement District	18.1	A project comprising the upgrading of the Dewdney Area Improvement District flood protection works.	Bank protection design by the Province is continuing. Dyke design is completed.
East and West Nicomen	19.1	A project comprising the upgrading of dykes, bank protection and internal drainage works in East and West Nicomen and I.R. 16, upstream.	Design work has been postponed on this project.
City of Kamloops	20.1	A project comprising the upgrading and construction of flood protection works in the Oak Hills area on the west bank of the North Thompson River in the City of Kamloops.	This project is complete.
	20.2	A project comprising the upgrading and construction of flood protection works in the remainder of the City and on the North Thompson, South Thompson and Thompson Rivers.	Design work has not yet commenced on this project.

*NOTE: It should be noted that the Project Description includes the reconstruction of main drains and pumphouses. This aspect of the projects has been deferred for the time being except where construction has been commenced or drainage works are integral with a dyking system.

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CONSTRUCTION

The information given in the following area-by-area breakdown is for projects on which significant activity occurred during the year. The locations of these works are shown on the map at the end of this report.

Kent

Project No. 1 — District of Kent. The project originally consisted of 11.5 miles of dyking, 8 miles of bank protection, 3 pumping stations, 3 floodboxes and improvements to internal drainage.

Bank protection along site "H" in Harrison Mills continued but was halted because the approved funding for the project proved insufficient to complete the work.

During construction erosion continued and extra material was needed to keep a proper alignment. Furthermore the proposed rock sources proved unsuitable and rock had to be brought in from the Kent quarry. Estimates are being prepared to determine the additional funds needed to complete the project.

The reconstruction of the Duncan-Bateson floodbox at Harrison Mills in the Municipality of Kent was completed.

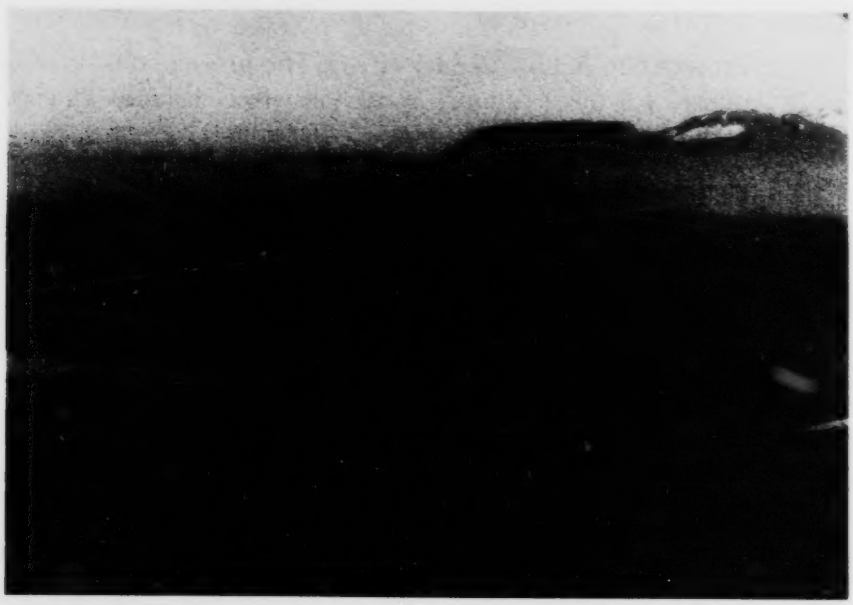
Delta

Project No. 6 — District of Delta. The project originally consisted of the rehabilitation of 27 miles of dyke, 8 miles of bank protection, 3 pumping stations and 12 floodboxes. The Delta project is now virtually complete except for Boundary Bay Village.

The contract for the Tsawwassen Indian Reserve flood control works was substantially completed during the period. There is some outstanding work to be completed such as seeding and some paving which was not possible due to inclement weather.

A report on alternative designs for flood protection in the Boundary Bay Village area is nearing completion and will be submitted to the Municipality of Delta later in 1986.

KENT — Reconstructed Duncan-Bateson floodbox.



DELTA — Breakwater dyke at Tsawwassen Indian Reserve showing gap engineered for salt water marsh preservation (arrow).

Chilliwack

Project No. 5 — District of Chilliwack. The project originally consisted of 17.0 miles of dyking, 4.0 miles of bank protection and drainage improvements. This project was completed some years ago except for the section of dyke from Minto Landing to Chilliwack Mountain. A substantial portion of this uncompleted section is located within the Indian Reserve lands.

No decision has been made by the District concerning dyke alignment and the provision of the necessary additional funds to provide the alignment preferred by the District and by the Indian Bands.

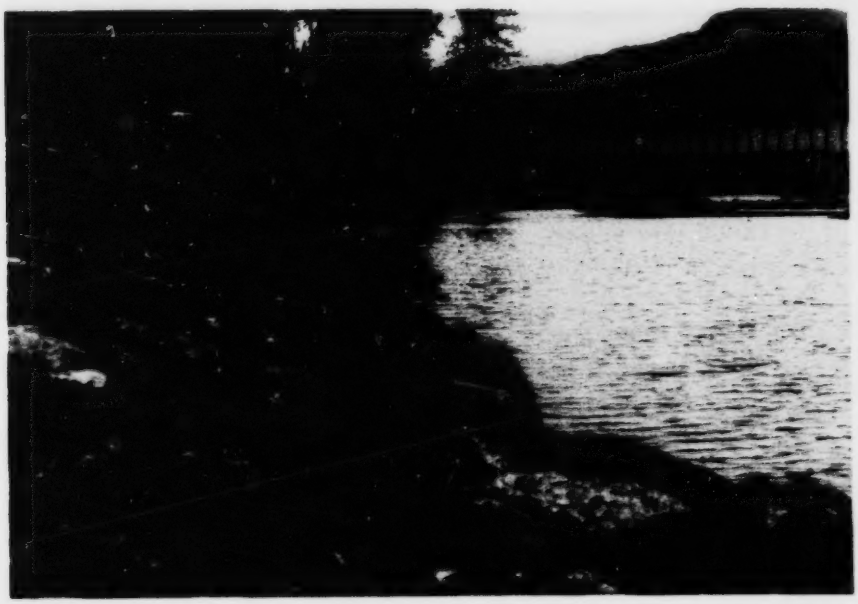
A report on the feasibility of dyking from Minto Landing to Chilliwack Mountain commenced and is scheduled to be completed by the end of May 1986, for submission to the Board.

Vedder River

Project No. 5.1 — Vedder River. The project consists of 5 miles of setback dykes, 1.5 miles of bank protection which includes 14 rock groynes, and 7 drainage discharge structures.

Calculations of the computed flood levels on the Vedder River revealed that a short section of the recently constructed dyke was below the design elevation. This portion of dyke was raised during the period at a cost of $46,707.

CHILLIWACK — Chilliwack Indian Reserve showing back channel subject to flood levels.



VEDDER RIVER — New bank protection upstream of B.C. Hydro Railway bridge; note debris, hung up in midchannel, that was deposited during high flows.

Dewdney

Project No. 14 — Dewdney Dyking District. This project consists of the reconstruction of 7.7 miles of dyke, 1.9 miles of bank protection, improvements to the Hatzic Slough dam and repairs to the existing floodbox. Work on the rehabilitation of the Dewdney dykes is scheduled to commence in 1986/87 fiscal year.

Pitt Meadows No. 2

Project No. 2. This project consists of the reconstruction of 5.4 miles of dyke, 0.5 miles of bank protection, the replacement of one floodbox and the construction of one additional floodbox.

A contract was entered into for the design of the Pitt Meadows No. 2 project. The first contract for reconstruction of the dykes in this area is scheduled for fiscal year 1986/87.

DEWDNEY — Typical of existing dyke prior to upgrading to Program standards.

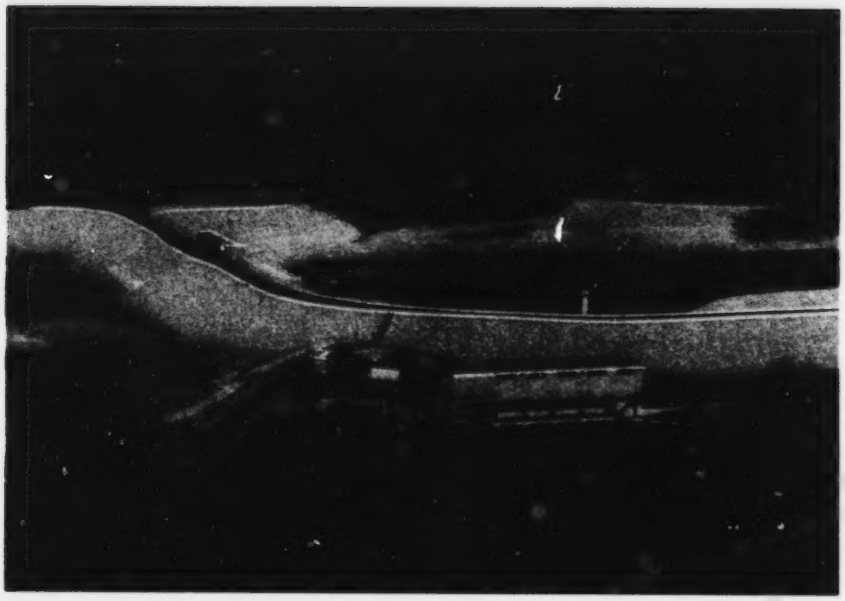
PITT MEADOWS No. 2 — Existing low and narrow dyke scheduled for rehabilitation.

Abbotsford

Project No. 8 — District of Abbotsford. This project, consisting of the construction of a new dam, pumphouse and floodbox on the Sumas River, together with the rehabilitation of the Vedder Canal dyke and the Sumas River dyke below the dam, was completed during the year. The total cost was $24,642,696.

Mission

Project No. 15 — District of Mission. Consulting engineers are preparing a report to be submitted to the Board which will contain recommendations for the rehabilitation of the Mission dykes.



ABBOTSFORD — Aerial view of completed project.

MISSION — Existing bank side development near the city centre. River bank scheduled for minor upgrading to Program standards.

Matsqui

Project No. 4 — District of Matsqui. The project originally consisted of 7.2 miles of dyking, 1.0 mile of bank protection and drainage improvements. Emergency and additional permanent bank protection works were subsequently approved for the Ridgedale area. The bank protection in the Ridgedale area of Matsqui was completed in January 1986 at a total cost of $1,510,000.

Emergency Work

A shift in the inpingement location upstream of the existing rip-rap at Site 7 in Chilliwack required extension of the bank protection.

A shift in the thalweg towards the bank, together with the undermining effect of deepening scour holes at Site H in Kent required removal of the existing groyne and reconstruction of the bank protection.

MATSQUI – Completed bank protection at Ridgedale.

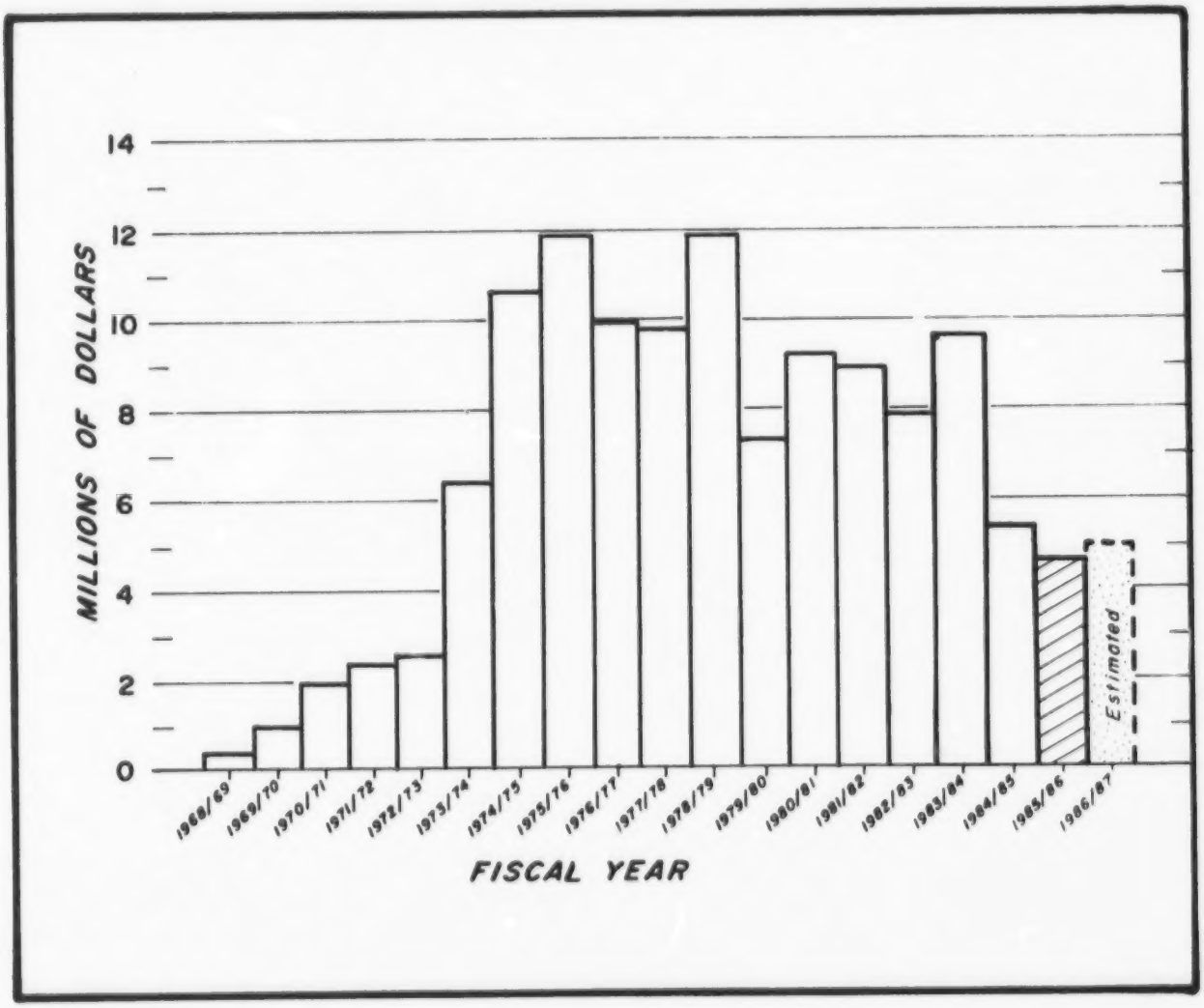
EMERGENCY WORK – Site H bank protection.

PROJECT APPROVALS

Projects that have been approved for construction by the Board and Ministers as of the reporting date are listed under "Approved Funds" in the Summary of Expenditures in Table II on page 26.

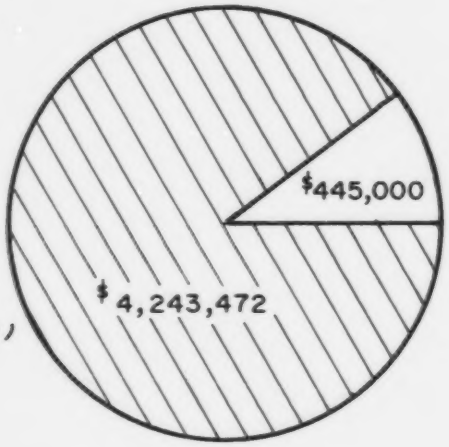
During the year approval was given for expenditures of: $7,125,000 and $400,000 for the Dewdney and Kent Site H projects respectively, plus $50,000 each for emergency bank protection work at Site H in Kent and Site 7 in Chilliwack.

ANNUAL EXPENDITURES



EXPENDITURES & BUDGET

Expenditures Report Year 1985 /86



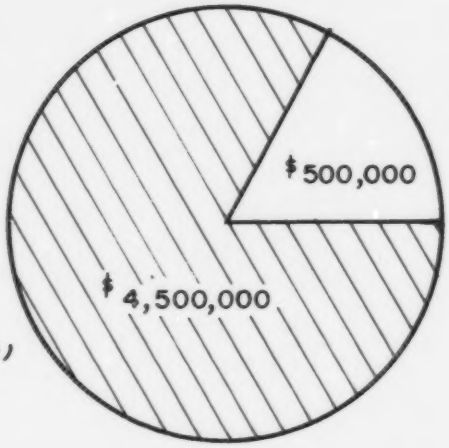
ENGINEERING, DESIGN AND ADMINISTRATION *

CONSTRUCTION (includes Emergency Work and site supervision)

TOTAL $ 4,688,472

Total Program Expeditures $ 119,429,563
(to March 31, 1986)

Expenditures 1986 /87



ENGINEERING, DESIGN & ADMINISTRATION

CONSTRUCTION (includes Emergency Work and site supervision)

TOTAL $ 5,000,000

Total Authorized Funding $ 161,000,000
(to March 31, 1995)

* The excess of total expenditures over the total of approved funds shown on page 27 results from adding the administration expenditures to the design expenditures in the total. As program administration expenditures cannot accurately be apportioned between the individual projects as can the design expenditures, the former are not included in the individual project costs submitted to the Board for approval and are not therefore included in the total of approved funds.

TABLE II

SUMMARY OF EXPENDITURES

No.	Project	Approved Funds		Expenditures to March 31/86	Estimated Future Expend. escal. at 10% p.a.	Total Estimated Expenditures
		Amount	Total Approved Funds			
1.	District of Kent	2,003,825.00 200,382.50 483,000.00 50,000.00 * 100,000.00 * 76,000.00 * 82,000.00 * 50,000.00 * 43,404.00 * 241,500.00 * 50,000.00 * 460,000.00	3,840,111.50	3,727,843.00	772,157.00	4,500,000.00
2.	District of Pitt Meadows Maple Ridge	60,782.75 * 23,500.00 * 11,100,000.00	11,184,282.75	7,343,456.00	3,956,544.00	11,300,000.00
3.	Township of Richmond	12,983,500.00 5,536,000.00	18,519,500.00	18,470,517.00	—	18,470,517.00
4.	District of Matsqui	2,511,960.00 36,000.00 * 15,000.00 * 20,000.00 * 12,853.32 * 23,808.00 * 1,500,000.00	4,119,621.32 (797,000.00) **	4,089,586.00	—	4,089,586.00
5.	District of Chilliwack	5,847,435.00 2,425,782.40 70,100.00 * 20,000.00 * 50,000.00 *	8,413,317.40	6,452,801.00	2,047,199.00	8,500,000.00
5.1	District of Chilliwack Vedder River	1,213,250.00 25,924.50 * 6,325,000.00	7,564,174.50	7,525,778.00	—	7,525,778.00
6.	District of Delta	12,102,255.00 6,426,925.00 1,300,000.00	19,829,180.00 (568,814.00) °	15,688,097.00	3,011,903.00	18,700,000.00
7.	District of Mission	—	—	—	500,000.00	500,000.00
8.	District of Abbotsford	99,864.00 * 460,000.00 450,000.00 25,300,000.00	26,309,864.00	24,642,696.00	—	24,642,696.00
9.	Harrison Hot Springs	—	—	45,340.00	1,004,660.00	1,050,000.00
10. 10.1 10.2	District of Surrey Serpentine-Nicomekl Dams South Westminster	 1,201,750.00 5,500,000.00	 1,201,750.00 5,500,000.00	 1,175,254.00 4,540,923.00	 — —	 1,175,254.00 4,540,923.00
11.	City of New Westminster	2,919,486.00 332,434.00	3,251,920.00	3,181,299.00	—	3,181,299.00
14.1 14.2	City of Port Coquitlam & District of Coquitlam Coquitlam River	5,560,000.00 17,000.00 * —	5,577,000.00 —	3,967,795.00 —	— 5,600,000.00	3,967,795.00 5,600,000.00
17.	Seabird Island	40,000.00 * 85,520.90 * 30,000.00 *	155,520.90	138,844.00	—	138,844.00
18.	Dewdney Improvement District	10,000.00 *	10,000.00	9,116.00	5,990,884.00	6,000,000.00
19.	Nicomen Island Improvement District	100,000.00 * 50,000.00 * 2,500.00 * 3,500.00 * 15,000.00 * 30,000.00 * 50,000.00 * 60,000.00 * 3,000.00 * 856,750.00 * 357,075.00 * 437,000.00 *	1,964,825.00	1,901,045.00	—	1,901,045.00
20. 20.1	City of Kamloops Oak Hills	— 1,283,400.00	— 1,283,400.00	— 1,051,444.00	8,500,000.00 —	8,500,000.00 1,051,444.00
21.	Glen Valley	—	—	—	4,000,000.00	4,000,000.00
22.	Salmon River	—	—	—	50,000.00	50,000.00
Pre-Agreement Construction		210,092.62	210,092.62	—	—	—
Construction Cost Totals				103,951,834.00	35,433,347.00	139,385,181.00
Upstream Storage Cost Design & Administration Costs Emergency Works			(3,298,082.47) °°	1,057,015.00 14,420,714.00 (2,969,875.86)	— 6,137,090.00 —	1,057,015.00 20,557,804.00 (2,969,875.00)
TOTALS			118,934,559.99[1]	119,429,563.00[2]	41,570,437.00	161,000,000.00

* Emergency Work.
** Cost not shared by Federal Government and not charged to Program.
° Cost not shared by Province and not charged to Program.
°° These costs are included in the various projects.

NOTES: [1] Includes the 15% contingency allowance where necessary.
[2] Includes administration costs of project management by provincial staff — not covered by project approvals totalled under [1]. (See explanation on page 26)

CONSULTANT SERVICES

Table III presents a list of consultants directly employed by the Province for the dyking program under the May 24, 1968 Agreement. The table indicates the assignments given to the consultants and the projects on which each consultant has been engaged.

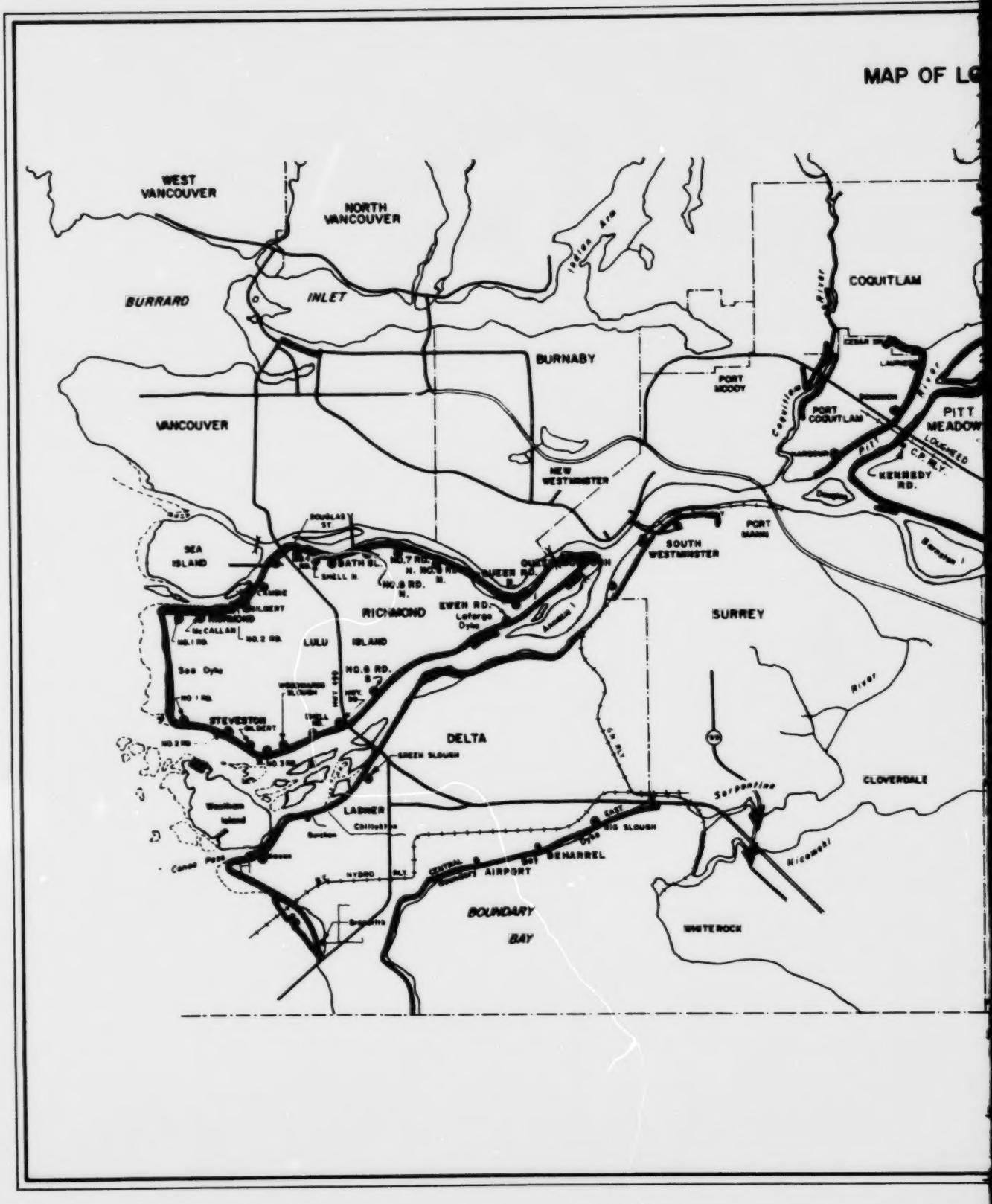
TABLE III

CONSULTANT SERVICES

Firm of Consultants	Assignment	Projects
Associated Engineering Services Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of the construction.	Districts of Pitt Meadows, Matsqui and Delta, City of New Westminster, New Westminster (Queensborough area).
	Design and supervision of construction for rehabilitation of the Serpentine-Nicomekl River Dams.	District of Surrey.
	Assessment of the Sumas Dam and Pump Station.	District of Abbotsford.
	Design of the standard pump station.	General.
Murray & Associates	Legal surveys.	District of Delta.
CBA Engineering Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of the construction.	Township of Richmond.
	General engineering services for the design of dykes and internal drainage works.	District of Mission.
Golder, Brawner & Associates Ltd.	Consultant services for soils investigations with regard to dyke improvements and soil consultant services during construction.	Districts of Kent, Pitt Meadows, Matsqui, Mission, Delta, Surrey (Serpentine-Nicomekl Valley), and Coquitlam.
McElhanney Associates	Legal surveys.	District of Chilliwack.
Ripley, Klohn & Leonoff	Consultant services for soils investigations with regard to dyke improvements and soil consultant services during construction.	Township of Richmond, District of Chilliwack, Chilliwack Indian Reserves 3 and 4, Districts of Abbotsford (formerly Sumas), Surrey (South Westminster area) and S. Dewdney Dyking District.
	General engineering services for design of dykes.	
Willis Cunliffe Tait & Company Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of construction.	Districts of Kent and Chilliwack.
	Preliminary design and cost of alternative proposal for the Hope Slough pump station.	District of Chilliwack.
Piteau Gadsby MacLeod Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of the construction.	City of Kamloops (Oak Hills dyking project).
Tunbridge & Tunbridge	Legal surveys.	District of Kent.
William Ker	Legal surveys.	District of Matsqui.
F.R. Bonn	Legal surveys.	District of Matsqui.
Cook Pickering & Doyle Ltd.	Consultant services for soils investigations with regard to dyke improvements and soil consultant services during construction.	District of Chilliwack.

TABLE III (cont'd)

Firm of Consultants	Assignment	Projects
Crippen Consultants	General engineering services for the design of dykes and internal drainage works, and supervision of the construction.	District of Coquitlam and City of Port Coquitlam, Districts of Surrey (South Westminster area), and Abbotsford.
Western Canada Hydraulic Laboratories Ltd.	Assessment of the fluvial geomorphology of the Vedder River.	District of Chilliwack, Vedder River Project.
Rivers Section Water Management Br. Ministry of Environment Province of B.C.	Detail design of Phase III — Setback Dykes, and supervision of the construction. Design and supervision of bank protection.	District of Chilliwack, Vedder River Project. Districts of Chilliwack, Kent and Delta, Nicomen Island Dyking District, Township of Richmond, City of New Westminster (Queensborough).
Hills Consulting Services Ltd.	Geotechnical advice for setback dykes.	District of Chilliwack, Vedder River Project.
Interwest Property Services Ltd.	Responsible for negotiations and land purchase for the Vedder River Project.	District of Chilliwack, Vedder River Project.
Allan and Ashford	Investigation and design for the reconstruction of the Duncan-Bateson Floodbox.	District of Kent.


MAP OF LO
WEST VANCOUVER
NORTH VANCOUVER
BURRARD
INLET
Indian Arm
COQUITLAM
BURNABY
PORT MOODY
VANCOUVER
PORT COQUITLAM
PITT MEADOW
Coquitlam River
Pitt River
C.P. RY.
KENNEDY RD.
NEW WESTMINSTER
SOUTH WESTMINSTER
PORT MANN
SEA ISLAND
DOUGLAS ST.
BATH ST.
NO.7 RD.
N. NO.5 RD.
QUEEN RD.
NO.6 RD.
EWEN RD.
Lafarge Dyke
RICHMOND
SURREY
LULU ISLAND
NO.8 RD.
Sea Dyke
STEVESTON
DELTA
GREEN SLOUGH
LADNER
Chilliwack
Sturgeon Island
Canoe Pass
Boundary Bay
HYDRO
CENTRAL
AIRPORT
BEHARREL
BIG SLOUGH
EAST
Dyke
CLOVERDALE
Serpentine River
Nicomekl River
WHITE ROCK
BOUNDARY BAY

MAP OF LOWER FRASER VALLEY SHOWING FLOOD CONTROL WORKS UNDER CONSTRUCTION
FOR THE PERIOD APRIL 1, 1985 to MARCH 31, 1986